

AMENDMENTS TO THE DRAWINGS

The attached two sheets of drawings include FIGS. 1-3 with the legend "PRIOR ART" as requested by the Examiner.

REMARKS

This Amendment is submitted in response to the outstanding Office Action, wherein the Examiner rejected claims 1 and 3-11, all the claims in the application. Reconsideration of the application in view of the amendments to the specification, drawing and claims and Terminal Disclaimer presented herewith and the following remarks is earnestly solicited.

The Examiner requested that FIGS. 1-3 each be designated by a legend such as - - PRIOR ART - - and designated Replacement Sheet.

Attached hereto are two sheets of new formal drawings including FIGS. 1-3 including the legend - - PRIOR ART- - and the notation that they are replacement sheets as requested by the Examiner. Accordingly, withdrawal of this objection is respectfully requested.

The Examiner reminded applicant to update the status of parent application Serial No. 10/084,542 at page 1. This has been done in the amendment to the specification. In addition, the first appearance of "LED" has been defined as - - A light emitted diode or "LED" - - . Accordingly, withdrawal of the objection to the specification is also respectfully requested.

The Examiner also objected to Claim 1, 3, 7, 8 and 9 because of informalities relating to minor grammatical errors and improper antecedent bases. The amendments to claims 1, 8 and 9 are believed to address the concerns. Claims 7 has also been amended so as to differentiate it from Claim 3.

In view of the amendments to the claims, Applicant respectfully submits that the objections have been obviated and that the objection to the claims should be withdrawn.

Prior to discussing the prior art rejection of claims 1 and 2-11, applicant sets forth the following brief remarks in connection with his invention. As described and taught in the specification, the claimed process is designed to provide for the accurate trenchless installation of an underground pipe uniquely combining features of microtunneling and horizontal directional drilling concepts. Initially, an accurately placed pilot pipe is installed utilizing the on-line and on-grade precision capabilities of a microtunneling guidance system. Once the pilot line is installed, a horizontal directional drilling machine is positioned a

suitable distance from the first access opening and a drill string is installed using the line of the installed pilot pipe. A back reamer is then pulled from the target shaft to the first access shaft. Finally, a product pipe is attached to a suitably sized back reamer and the product pipe is pulled into place along the existing accurately positioned expanded pilot line.

The product pipe may be individual sections of product pipe or a continuous length of product pipe. In all cases, the resulting underground pipeline may be of large size utilizing the horizontal directional drilling concepts while the line is accurately positioned using the on-line and on-grade line of the pilot pipe due to the highly accurate microtunneling guidance systems utilized to install the pilot pipe. This makes the process particularly well suited for installation of underground gravity fed municipal sewer systems.

Turning to the prior art rejection, the U.S. Examiner rejected claims 1, 6, 10 and 11 under 35 U.S.C. §103(a) as unpatentable over Duke, et al. (No. 4,438,624).

The Examiner considered that Duke, et al. as shown in Figs. 1 and 2 disclose a process for the trenchless rehabilitation including all of the features of the claims with the exceptions of the steps of jacking additional pilot tube sections into the ground and pulling the product pipe into the line from the first access shaft to the target access shaft. She concludes that with respect to claim 1 it would have been obvious to one of ordinary skill to modify the method disclosed by Duke, et al. such that it would include the step of jacking additional pilot tube sections into the ground since mere duplication involves routine skill in the art.

With regard to claim 11 she concludes it would be obvious to modify the method of Duke, et al. such that the product pipe would be pulled from the first axis shaft to the target shaft as desired to introduce the product pipe into the line of the pilot pipe from the shaft nearest to supply product pipe.

This rejection is respectfully traversed for the following reasons.

In describing the teaching of Duke, et al., the Examiner recites a step of “installing a drill string (50) to replace the pilot pipe.” Applicants respectfully submit that the Examiner has not read Duke, et al. correctly with respect to this step. As shown in Fig. 2 and discussed

at column 3, line 55-58, element 50 is a fluid-lubrication conduit attached to the rear wall of the earth boring member. It is not a drill string as set forth in applicant's process and recited in claim 1. Applicant describes in the specification, at paragraph 00042: "Once pilot tube 62 is in place, a directional drilling machine is utilized to displace pilot tubes 61 by a drill string."

As noted above in connection with the description of applicant's claim, applicant uniquely combines features of microtunneling and horizontal directional drilling concepts. Duke, et al. on the other hand merely addresses microtunneling features including providing a pilot pipe and enlargement of the pilot pipe bore by a back reamer. There is simply no teaching or suggestion in Duke, et al. to combine the microtunneling concepts with that of directional drilling and installation of a drill string in the line formed by the pilot pipe. It is emphasized that element 50 is not a drill string, but a fluid conduit. For this reason, applicant respectfully submits that claim 1 is indeed patentable over the teachings of Duke, et al. Accordingly, this rejection should be withdrawn.

Turning to the rejection of claims 3, 4, 5, 7 and 9 over Duke, et al. in view of Hesse et al. (U.S. Patent No. 5,833,015) it is respectfully noted that these claims are dependent on claim 1. Accordingly, these claims are also patentable over Duke and the combination with Hesse el al. for the reasons set forth above. Thus, this rejection should also be withdrawn.

Finally, the Examiner set forth a double patenting rejection. In view of the accompanying Terminal Disclaimer, applicant respectfully submits that the double patenting rejection is no longer applicable and should be withdrawn.

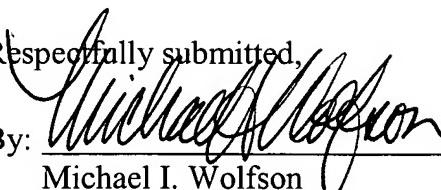
Applicant has made a sincere effort to address the concerns of the Examiner. Accordingly, it is respectfully submitted that claims 1 and 3-11, all the claims in the application, are allowable over the art and are in condition for immediate allowance. Accordingly, the Examiner is respectfully requested to reconsider the application at an early date with a view towards issuing a favorable action thereon. If upon review of the application, the Examiner is unable to issue an immediate Notice of Allowance, the

Examiner is respectfully requested to telephone Applicant's attorney with a view towards resolving the outstanding issues.

Early and favorable action is earnestly solicited.

Respectfully submitted,

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